

## Invasive Species Management With Volunteers

Name of Project: Sandbur Eradication at French Frigate Shoals: The Sequel

Refuge: Hawaiian Islands National Wildlife Refuge, Tern Island Field Station

Project Description: Sandbur (*Cenchrus echinatus*) was eradicated from French Frigate Shoals (FFS) in 1998. In 2011, sandbur was resighted in the atoll on East Island, home to 90% of the world's nesting Hawaiian green sea turtles. In March 2012, 4 plants were resighted on Tern Island, home to the vast majority of nesting seabirds in French Frigate Shoals – over 120,000 nesting pairs on Tern Island alone. This plant diminishes sea turtle hatchling success as well as critical seabird nesting habitat. The project purpose is to eradicate sandbur from East and Tern Islands. Lack of functioning outboards is a barrier to rapid response to this weed; therefore project funds are requested for an outboard motor and fuel required to access East Island, as well as supplies.

Using GPS technology, we will first map the extent and density of infestation on East Island before hand pulling begins. Because East Island is a low coral island that also serves as critical habitat for sea turtles and ground-nesting seabirds, manual control is the preferred approach in our Integrated Pest Management. We will remove all sandbur, as well as work toward control other targeted invasives, at least once per month during the growing season. We will re-map the extent of the infestation again at the end of the season, and annually thereafter.

Because there are so few plants currently on Tern Island, prevention of further reintroductions from East to Tern is a significant component of the project. Regular surveys of Tern Island as well as quarantine protocols for travel between islands are therefore included in this project, as part of our prevention and early detection efforts.

Friends Groups, Volunteers and Other Partners: This project will be accomplished primarily by US Fish & Wildlife Service volunteers, supervised by full-time staff. We expect approximately 384 volunteer hours and 160 staff hours to be spent on this project.

Public Outreach and/or Environmental Education: These activities will be shared with our Hawaii classroom partners (usually 3-7 classrooms) via email, Skype, and classroom visits. The objectives and accomplishments of this project will also be shared on our blog. The two volunteers will spend between 2 and 8 hours per week on outreach activities at FFS.

Post-treatment Monitoring: Our follow-up monitoring schedule and protocols will be adapted to maximize effectiveness according to phenology observations of sandbur specific to East Island. At this stage, however, we expect that eradication will require monthly surveys and weeding during the growing season and bi-monthly efforts during the dry season for the first two years. After two years, we anticipate reducing the survey and weeding intervals to once every two months throughout the year. Permanent elimination of sandbur from the seed bank will likely require, at minimum, fall and winter surveys for sprouts following the sea turtle nesting season for the next 7-10 years.

Criteria for Project Success: By Fall 2012 we expect to have the present outbreak mapped and contained to within 2 acres of East Island, with no more than 10 plants/month discovered on Tern Island. By Fall 2014, all of East Island and Tern Island should be free of sandbur and an effective spot-checking schedule established. We will consider our efforts successful if these populations of sandbur are eliminated within 4 years. By working with and training volunteers, we will also meet a program goal of directly engaging young people with invasive species control efforts on refuge lands. These individuals, as well as the young students they share their experiences with in our outreach program, will come away from this project with a greater appreciation of the threats that invasive species pose and the strategies that the Fish and Wildlife Service uses to address them.

Budget: Est. 320 volunteer hours and 160 FWS staff hours.

Requested funding: \$9,858, for outboard engine, parts, and fuel needed for access, and field supplies

Project Total: \$18,767